DESIGN AND IMPLEMENTATION OF AN ONLINE DATABASE PANEL

Frenny Thomas

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Design and Implementation of an Online Database Panel

by

Frenny Thomas

Honors Thesis

http://students.colstate.edu/thomas_frenny/thesis

Thesis Advisor: Dr. Stan Kurkovsky

Honors Coordinator: Dr. Barbara Hunt

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9:30am - 10:45am

Monday July 22, 2002

Computer Science Dept. (FOB)

Main Office Conference Room

G-11-02
G-A

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HONS 4001 Project Proposal

By: Frenny Thomas
Mentor: Dr. Stan Kurkovsky

Project title/proposal:
Design and Implementation of an Online Database Panel
Sample application: newspaper content management system

Motivation:
There is a growing need for administrative panels such as the one described in this project. More and more website administrators wish to make changes to their online business without having to directly modify the database file. This project provides the perfect solution for this scenario by placing all database access on the World Wide Web. Administrators can now use this software to add, edit, and delete tables, fields, and records. Additionally, users will be able to generate queries without knowledge of Structured Query Language.

Rationale/significance:
This project acts as a summary of my computer science education at this university by requiring the following skills:

- Knowledge of HTML design and coding
- Experience in planning and designing software projects
- Database planning, design, and usage
- Knowledge of VBScript to code Active Server Pages (ASP)
- Use of Javascript for client-side data validation
- Practice in SQL generation and use of Recordsets

Target Users:
Website administrators who require online access to databases, thereby allowing instantaneous content modification.

Goals/Objectives:
To implement a user-friendly online interface that functions exactly as Microsoft Access 2000. This involves the creation and manipulation of tables, fields, and records. It requires the knowledge of internal functions within the Microsoft.Jet.OLEDB.4.0 Provider to create SQL instructions, as well as the ability to create and display Recordsets in an efficient and accurate manner.

In addition to being able to manipulate data, the online panel must also be able to display the data in any modified format as designed by the user. Therefore the panel must pose a series of questions regarding the desired results, and convert the request into one SQL query. This may involve the use of Session objects as well.

Comments or suggestions for the proposed method of implementation:
In its commencement, the project will simply function as an online interface surrounding an empty Access database. Then through links on a navigation menu, users will have the choice to manipulate tables, fields, and/or records on this project. Once the panel is completely able to modify an Access database through its interface, a fictional newspaper's administrative panel will be designed to implement this project. The newspaper panel will run the features of this panel once login authentication has been completed.

This project will include the use of FrontPage 2000 and Notepad for HTML & Graphical design, MS Access 2000 for database applications, and Visual Interdev for ASP coding.

Sample Application:
For future purposes, this project can serve as a model for an administrative panel for the Book Bulletin (students.colstate.edu/causa/books) – a service for CSU students to post their used textbooks for sale. To keep the Book Bulletin running without erroneous data, it is essential that future administrators of the Honoris Causa website be able to view, update, and delete entries in the Book Bulletin database. An online administrative panel must be user-friendly and simple so that one does not have to have extensive technical knowledge to use the system.

Proposed Project Schedule

Note: Each checkpoint will test and verify the functionality listed on the previous period

May 3	Allocate folders and empty Access database file on CSU web space; prepare website for project
May 3 - 15	Forming a Table: Research and implement internal Access functions to create a table with user's field specifications
May 15	Checkpoint with mentor
May 15 – May 29	Modifying Tables: implement options to add/edit/delete fields, change primary key, rename and drop tables.
May 29	Checkpoint with mentor
May 29 – June 12	Adding Records: implement ability to add, edit, and delete records in any selected table.
June 12	Checkpoint with mentor
June 12 – June 26	Query Generation: produce SQL queries through a series of simple questions.
June 26	Checkpoint with mentor
June 26 – July 10	Practical application: Newspaper administrative panel that implements all previous functionalities
July 10 – July 15	Revisions and corrections made to project with mentor
July 15	Submission of final project to mentor Arranging of Honors thesis panel
July 22	Oral Defense presented to Thesis panel
July 23 – 29	Revisions (if any) made on final Thesis
July 29	Submission of Thesis copies to library and Dr. Hunt

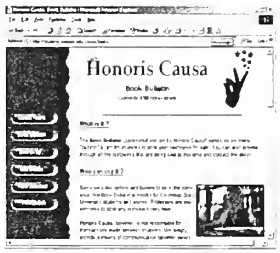
HONS 4001
Honors Thesis Oral Defense

July 22, 2002

By: Frenny Thomas

The Book Bulletin

- Independent Study Project
- An online service for students to post and search for used textbooks
- Skills involved
  - Database access
  - Table design
  - Record management



http://students.colstate.edu/causa/books

What is an Honors Thesis?

- Senior in the Honors Program
- HONS 4001
  - Study an approved topic *or*
  - Create a project to accomplish some computing task
- Result = A software project to be presented and defended in an oral defense
- Copies placed in the Simon Schwob Library and/or on the CSU Honors Program website

Some Key Terms

- **Database** = A structure that holds all data relating to a particular purpose *Ex NorthWind*
- **Table** = An entity that actually holds the data and is defined by a particular structure *Ex Customers*
- **Field/Column** = An element of a table record *Ex. Email*
- **Record** = The primary unit of information contained in a table
- **Primary Key** = The field that uniquely identifies each record *Ex SSN*

Customers

SSN	Name	Email
200325235	Sandra Connor	sconnor@yahoo.com
201304135	David Hardy	David@hotmail.com
210025342	Laura James	Ljames@colstate.com

The Plan

- Motivation
  - Online database access for web administrators to keep their sites "up-to-date"
  - Stored data presented without Server-Side scripting knowledge
  - Dynamic generation of queries
- Objectives
  - A web-based interface to Microsoft Access® 2000
  - Newspaper content management system

Part I: Access 2000 Interface

- Tables
  - Create/Rename/Delete
- Fields
  - Add/Edit/Delete any number of Fields
  - Set Access 2000 data types
  - Primary Keys
  - ADOX – Extended ADO
- Records
  - Add records according to listed data type
  - View only specified fields within a table
  - Edit if Primary Key specified
  - Delete from Edit mode

Project Tools

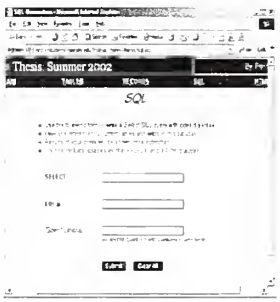
- ✓ HTML
- ✓ Software Project experience
- ✓ Database design
- ✓ JavaScript
- ✓ Active Server Pages (VBScript)
- ✓ SQL

- ❑ Access 2000
- ❑ Visual Interdev
- ❑ FrontPage 2000
- ❑ Adobe Photoshop 6.0
- ❑ WS_FTP

Part I: Access 2000 Interface (contd..)

- SQL
  - Columns
  - Tables
  - Other specifications

** Results in table format showing only selected fields



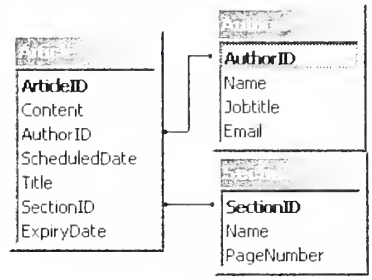
Demo

Access 2000 Interface

students.colstate.edu/thomas_frenny/thesis

Part II: Online Newspaper

Entity Relationship Diagram



Part II: Online Newspaper

- The Cougar Report
  - (www.winslowaznews.com)
  - 7 Authors
  - 18 Articles
  - 6 Sections

Part II: Online Newspaper

PseudoASP Guidelines

<#TableName||ColumnName||FieldName1='text'||FieldName2=32||FieldName3=#2/23/00#|| #>

- 1 Field of 1 Record
- At least one Field specification required
- Submission method
  - Cut & paste (requires filename)
  - Upload
- Templates saved in database table
- *curDate* = System date
- *URL.variablename* = retrieve query string variable value
- Relative hyperlink paths and "&" delimiter

<a href="page2.htm&sectionid=3&authorid=6">

Demo

Online Newspaper

students.colstate.edu/thomas_frenny/thesis

Any Questions ?

Conclusion

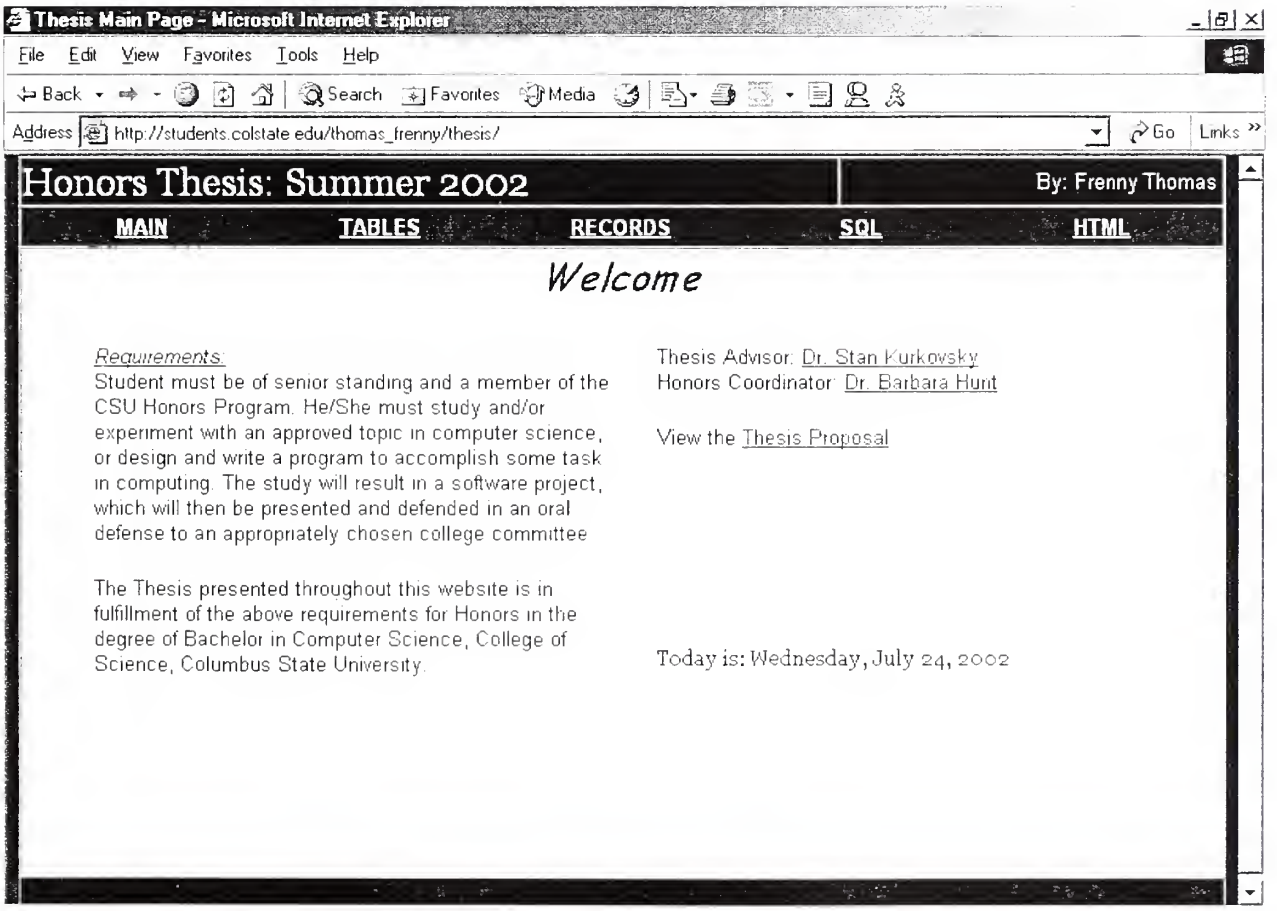
- Accomplishments
  - A web-based tool for database management
  - An online newspaper composed entirely from the PseudoASP template processor
- Future Uses
  - Book Bulletin administrative panel

The End

Step # 1

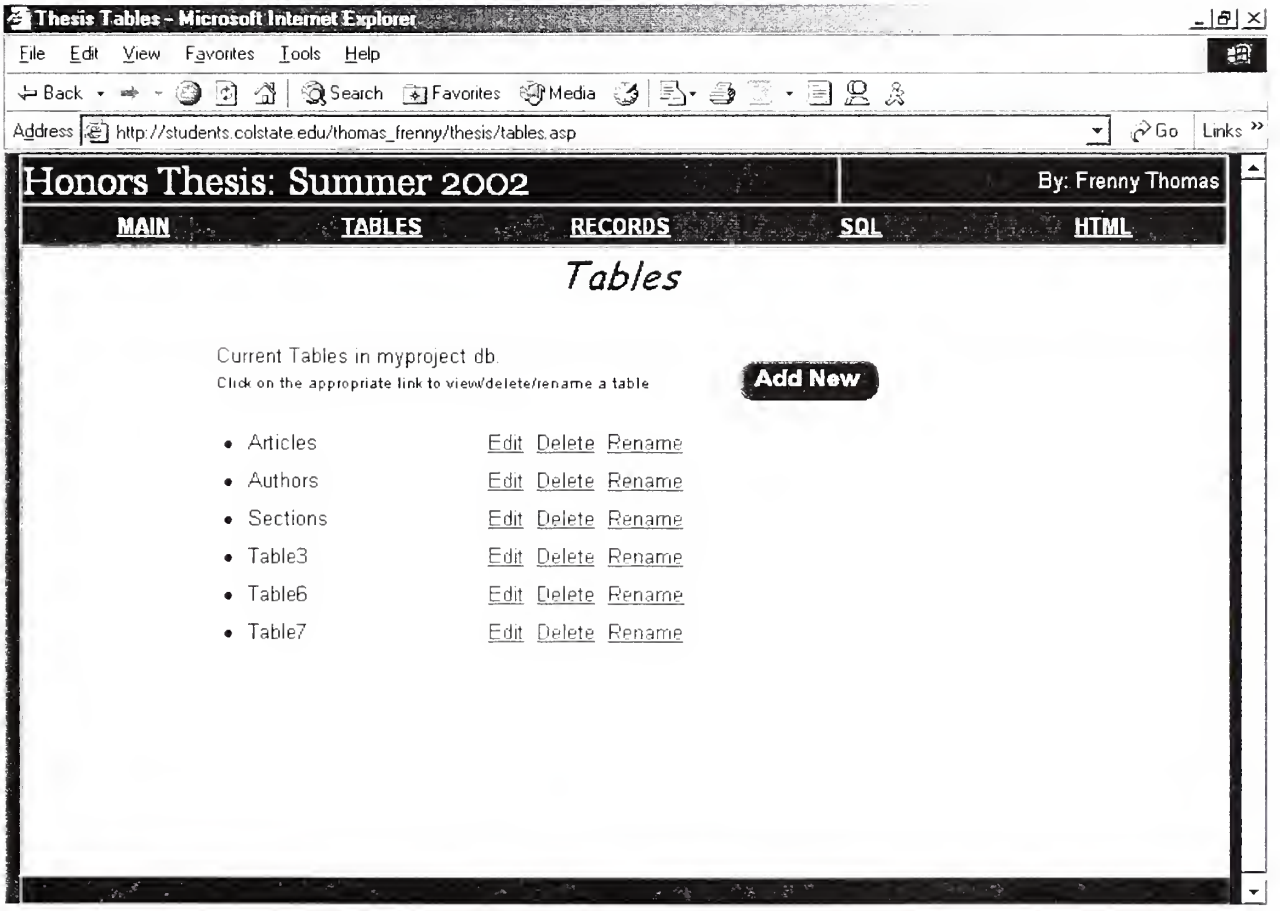
- Open up Internet Explorer on your computer
- Type in http://students.colstate.edu/thomas_frenny/thesis as the URL destination

**Note: After July 31,2002, the URL will be renamed to http://studentwebs.colstate.edu/thomas_frenny/thesis



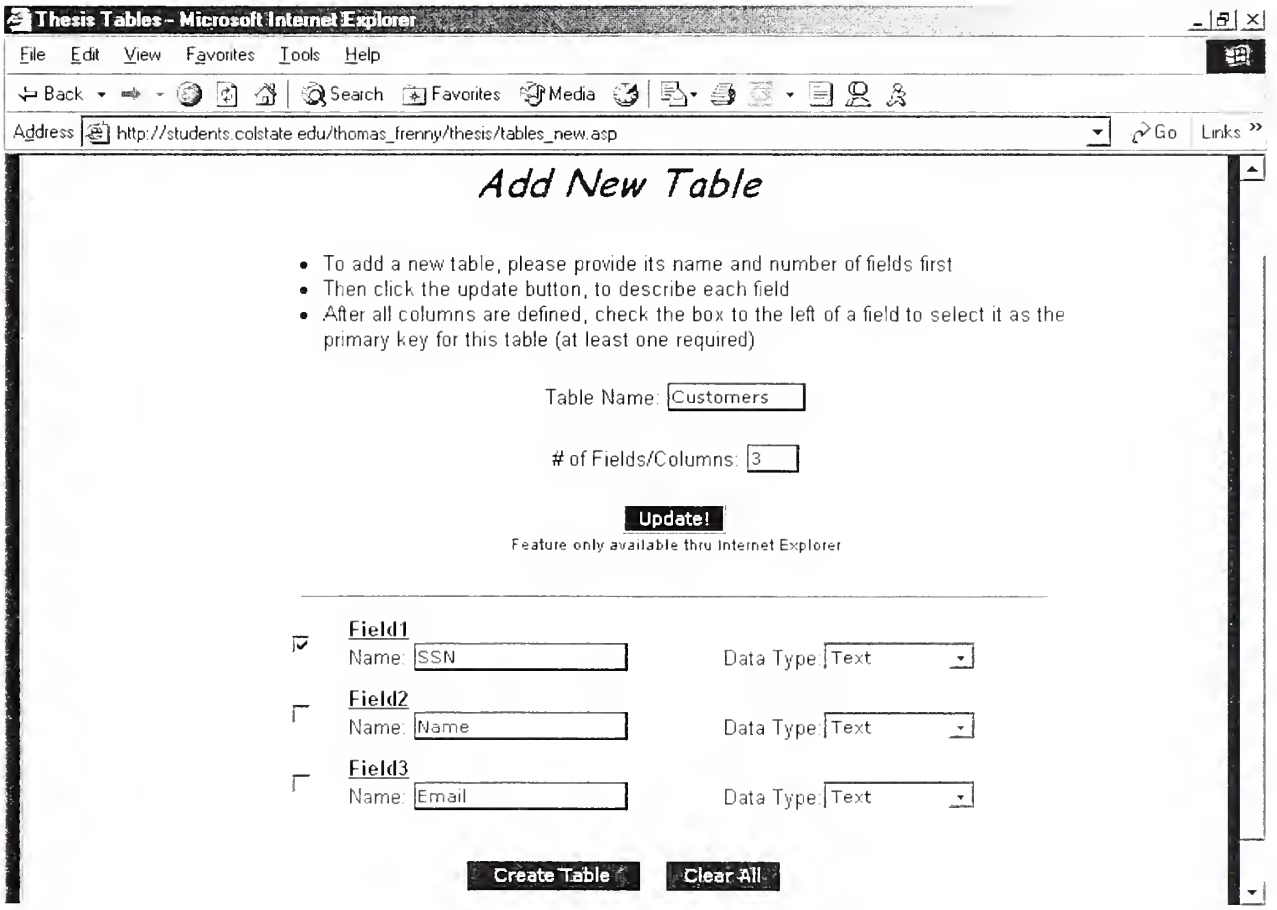
Step # 2

- Click the "Tables" Link on the top navigational bar
- Click on the "Add New" button to create a table



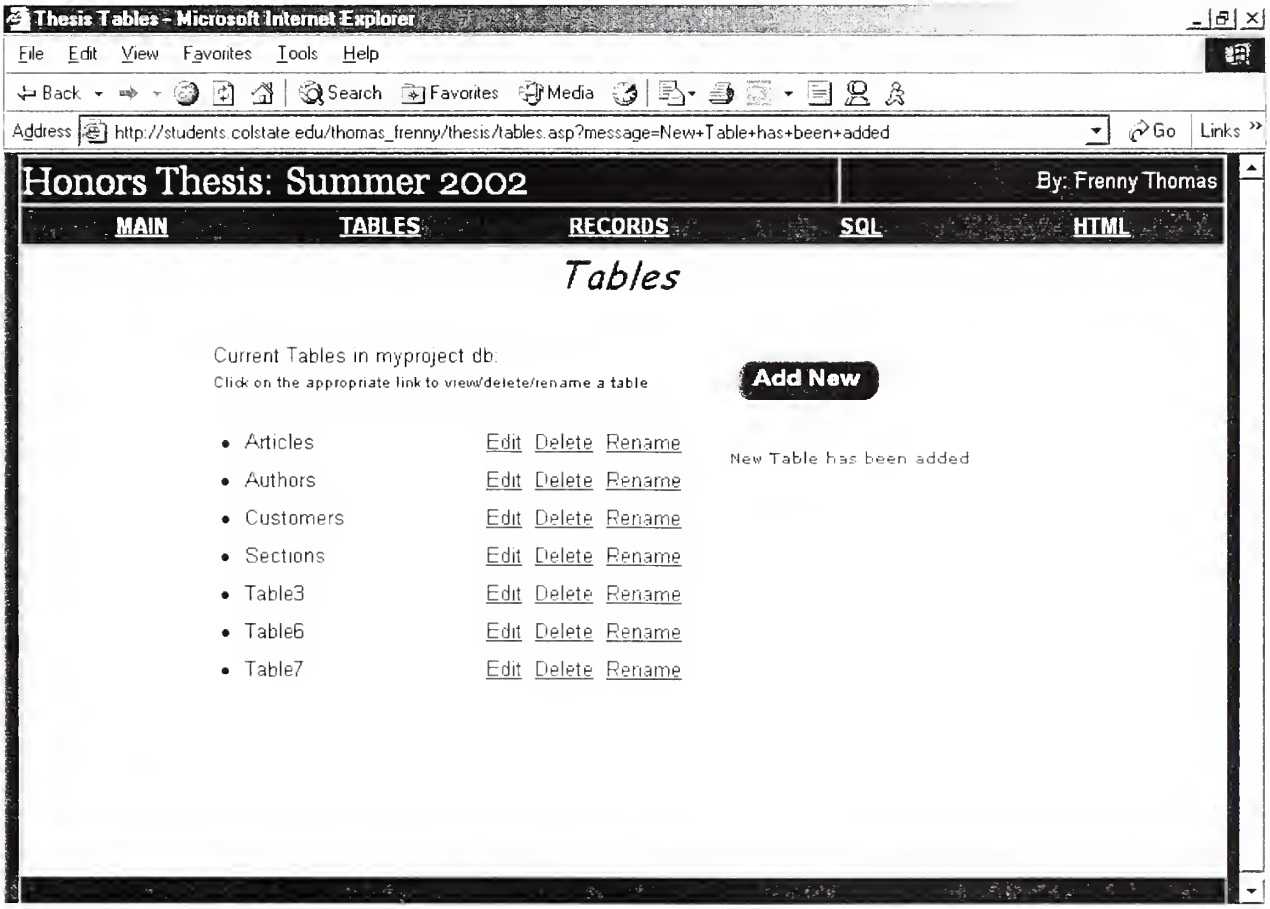
Step # 3

- Type "Customers" as the Table Name
- Type the number "3" into the # of Fields, then hit the "Update!" button (The 3 field areas will appear below)
- Provide 3 Field names and specify field types. Check the box(es) next to the field(s) you wish to set as a primary key field(s).
- Click the "Create Table" button to create the specified table



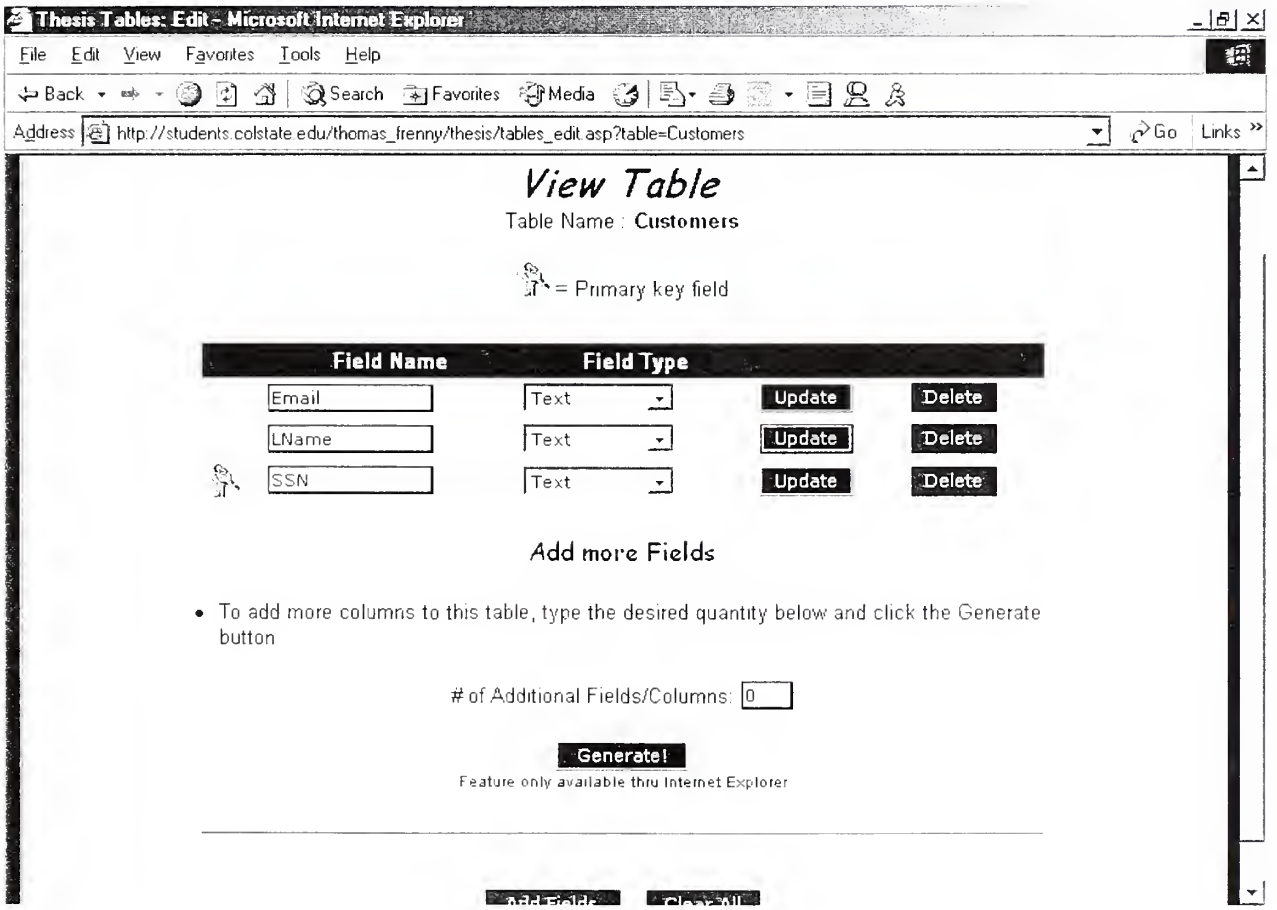
Step # 4

- A confirmation message will appear on the main "Tables" page, and the table "Customers" will appear in the list of existing tables
- Click the "Edit" button beside the "Customers" table to redefine the Table specifications



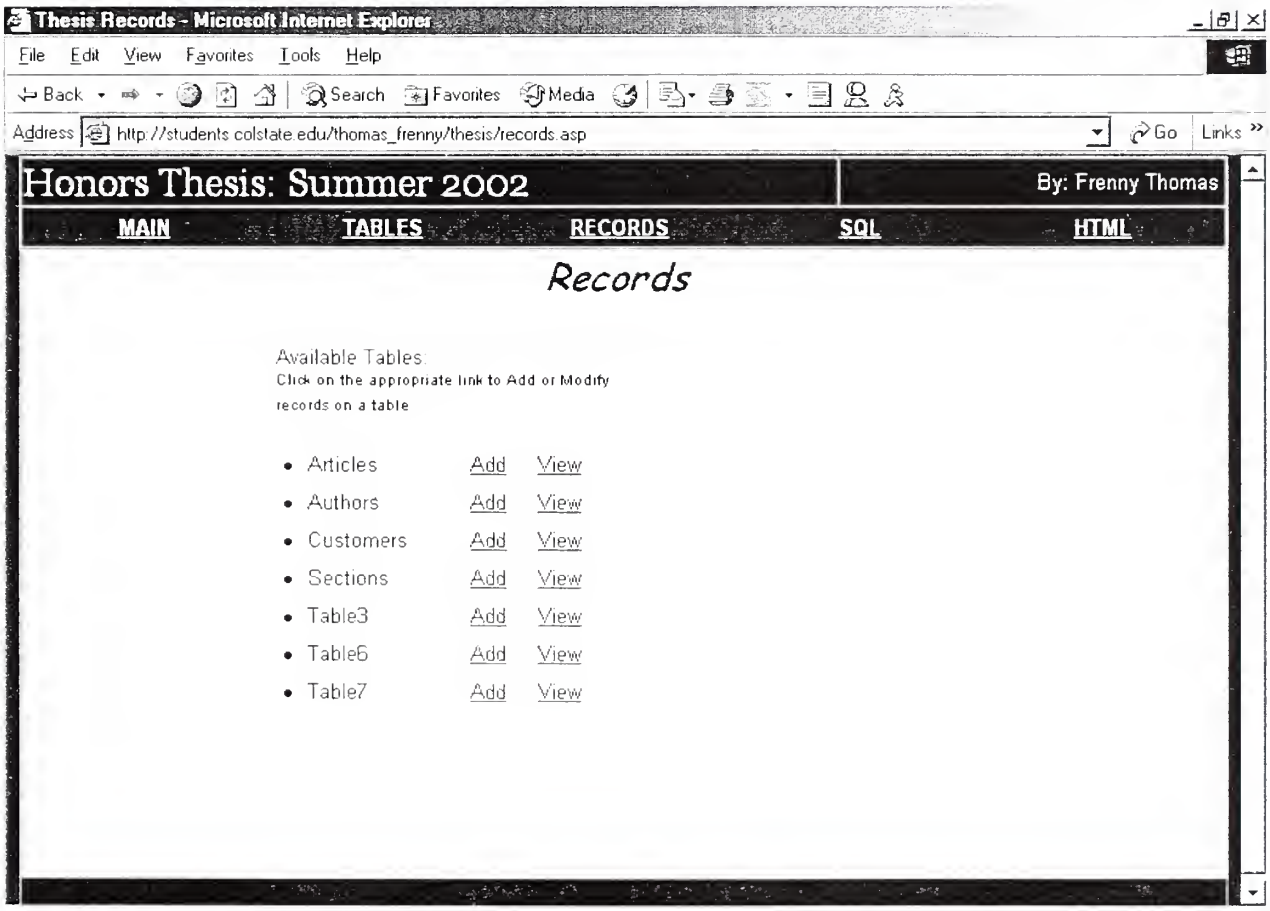
Step # 5

- All the fields within the "Customers" table will be displayed.
- Additional fields can be added by specifying the desired number below, clicking the "Generate" button, completing the field names and data types, and clicking the "Add Fields" button to complete the process
- Change the Field Name "Name" to "LName" and click the Update button.
- A confirmation message will appear on the same page and the field name will have been permanently changed.



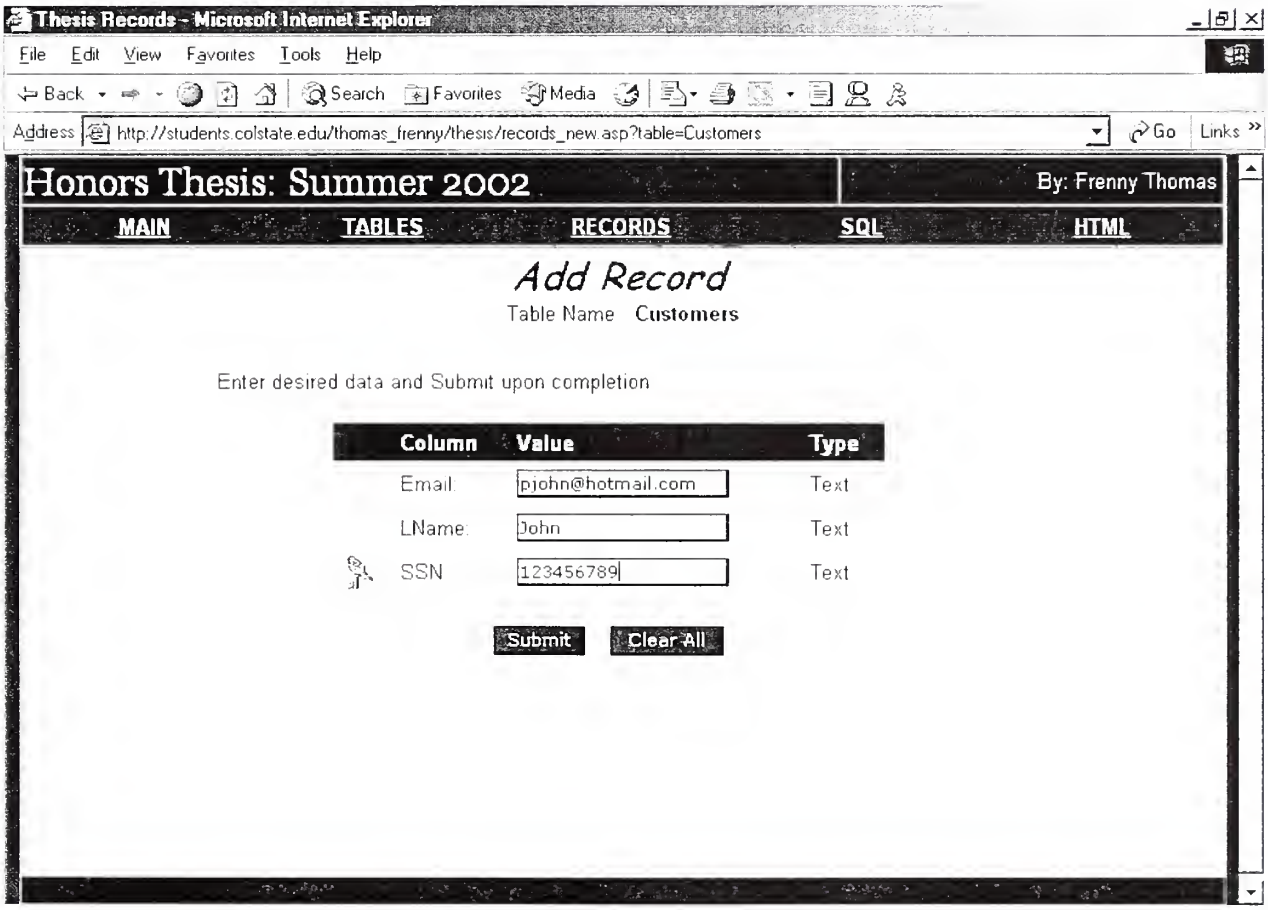
Step # 6

- Click on the "Records" link on the top navigational bar
- Click on the "Add" link beside the "Customers" table to add 1 record to the entity



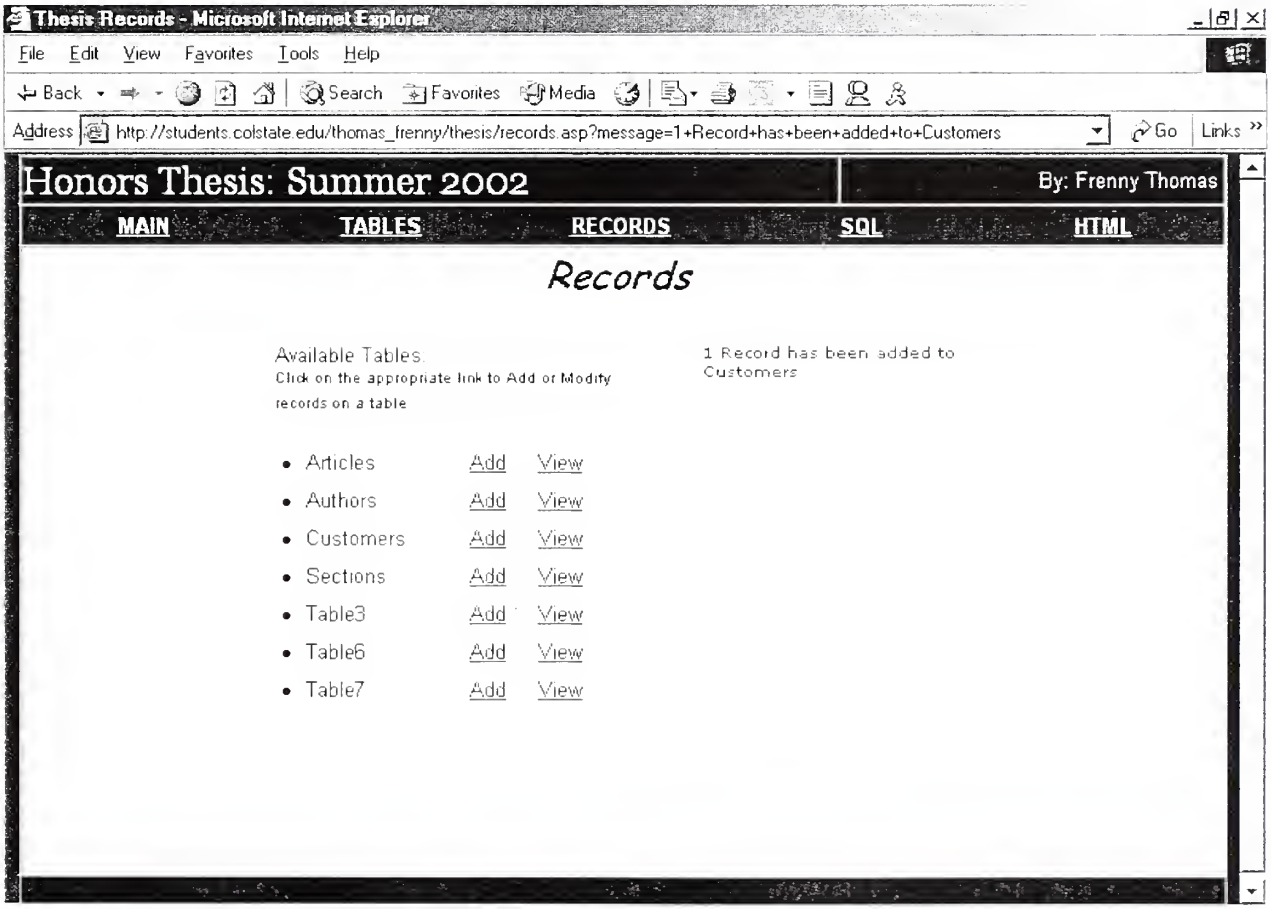
Step # 7

- A Record layout will be displayed for the Customers table; including Field Names and Field data types as guides
- Fill in all the fields and click the "Submit" button to create the first record



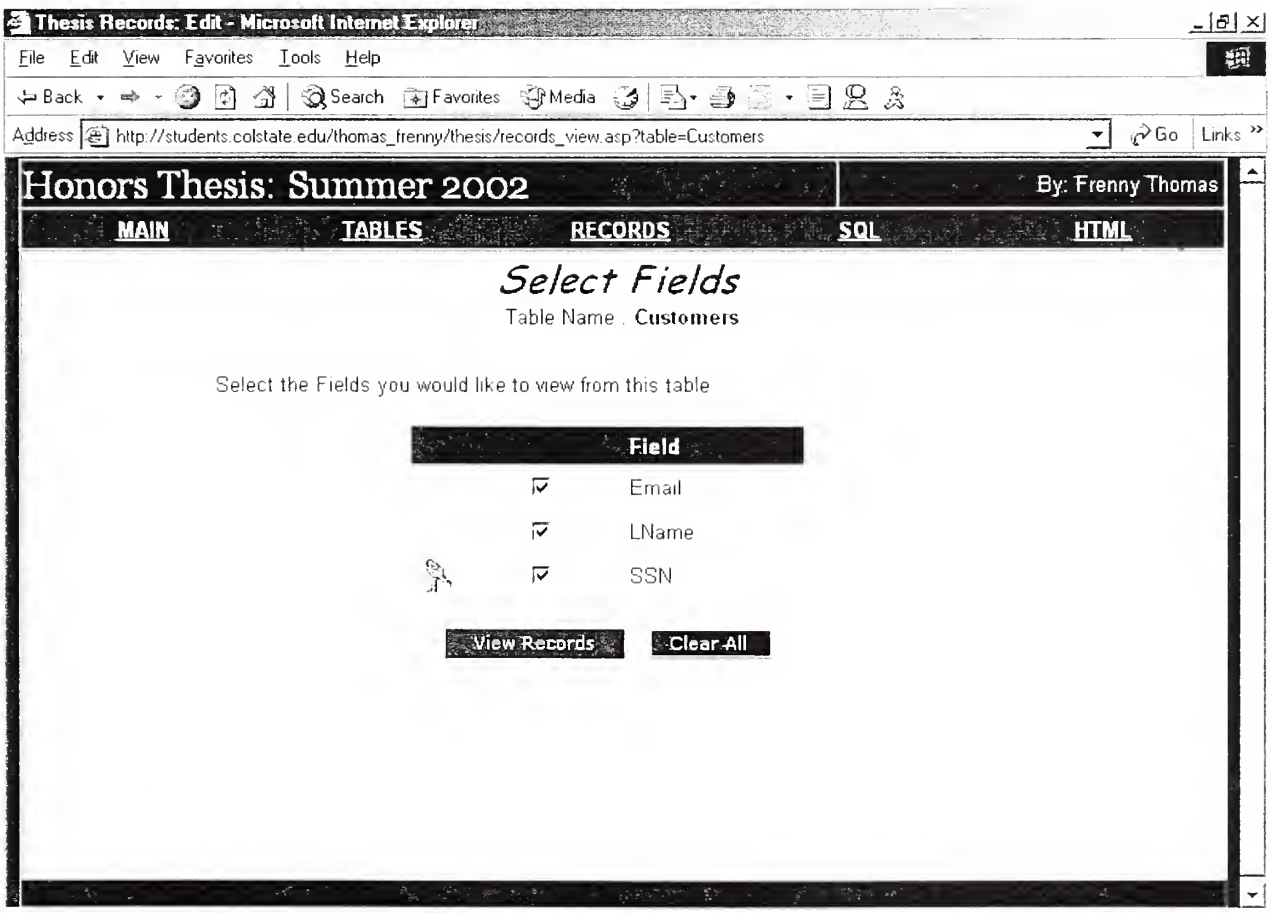
Step # 8

- A confirmation message will appear on the Records main menu.
- Click on the "View" link beside the "Customers" table to view & edit the previous record



Step # 9

- Before viewing all records, you must specify which fields you'd like to see from the table Customers
- Place a checkmark next to each field you'd like to see in the results
- Click the "View Records" button



Step # 10

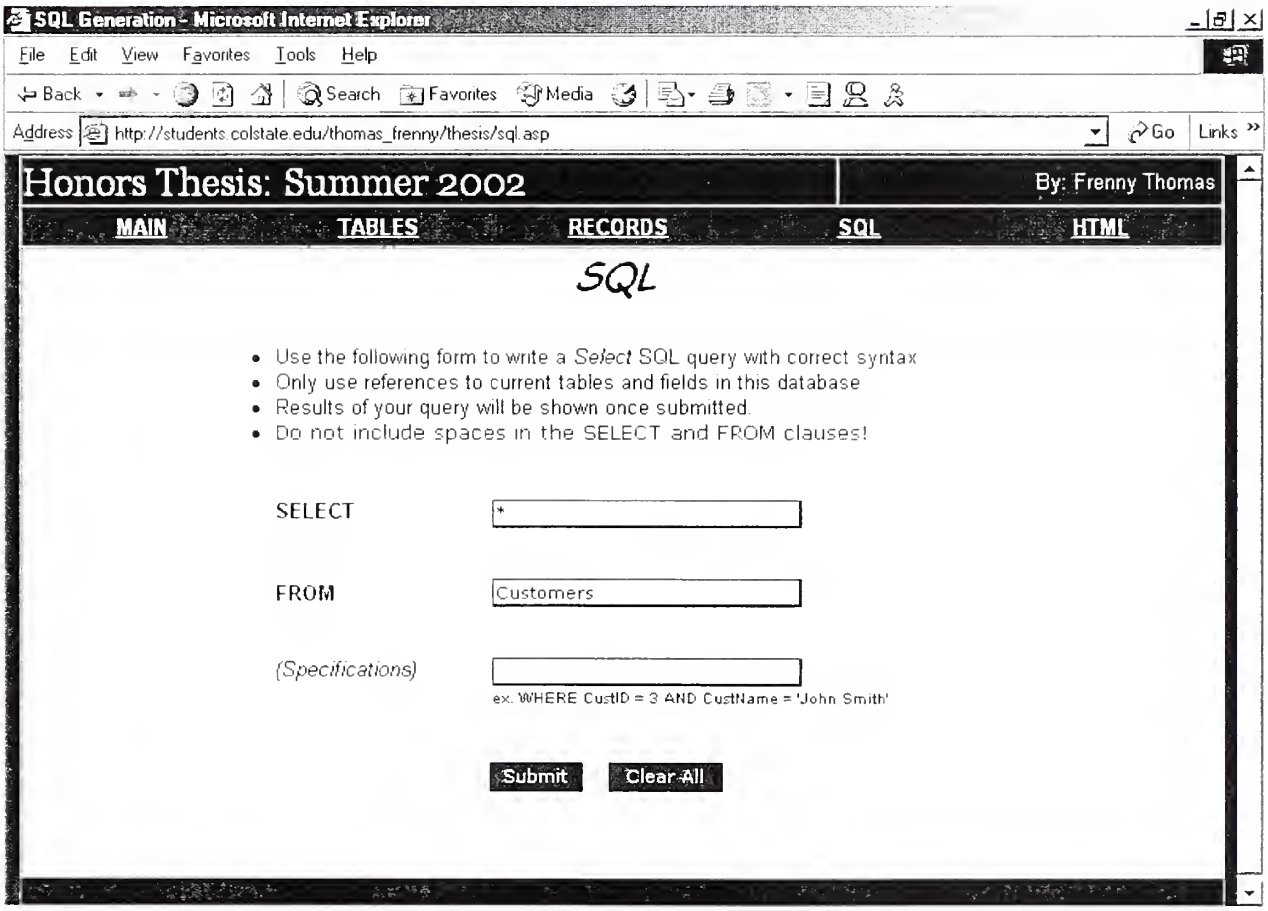
- The following page will display all the records within the "Customers" table customized by the previously selected fields
- A radio button will appear beside each record
- To Edit the 1st record, click the "Modify Selected Record" button while the first record is selected

Step # 11

- The following page will display the previously selected record in Edit mode, as well as guides to each Field data type
- Change the Email value to "pjohn@msn.com"
- Click the "Update" button. A confirmation message will appear on the Main Records page

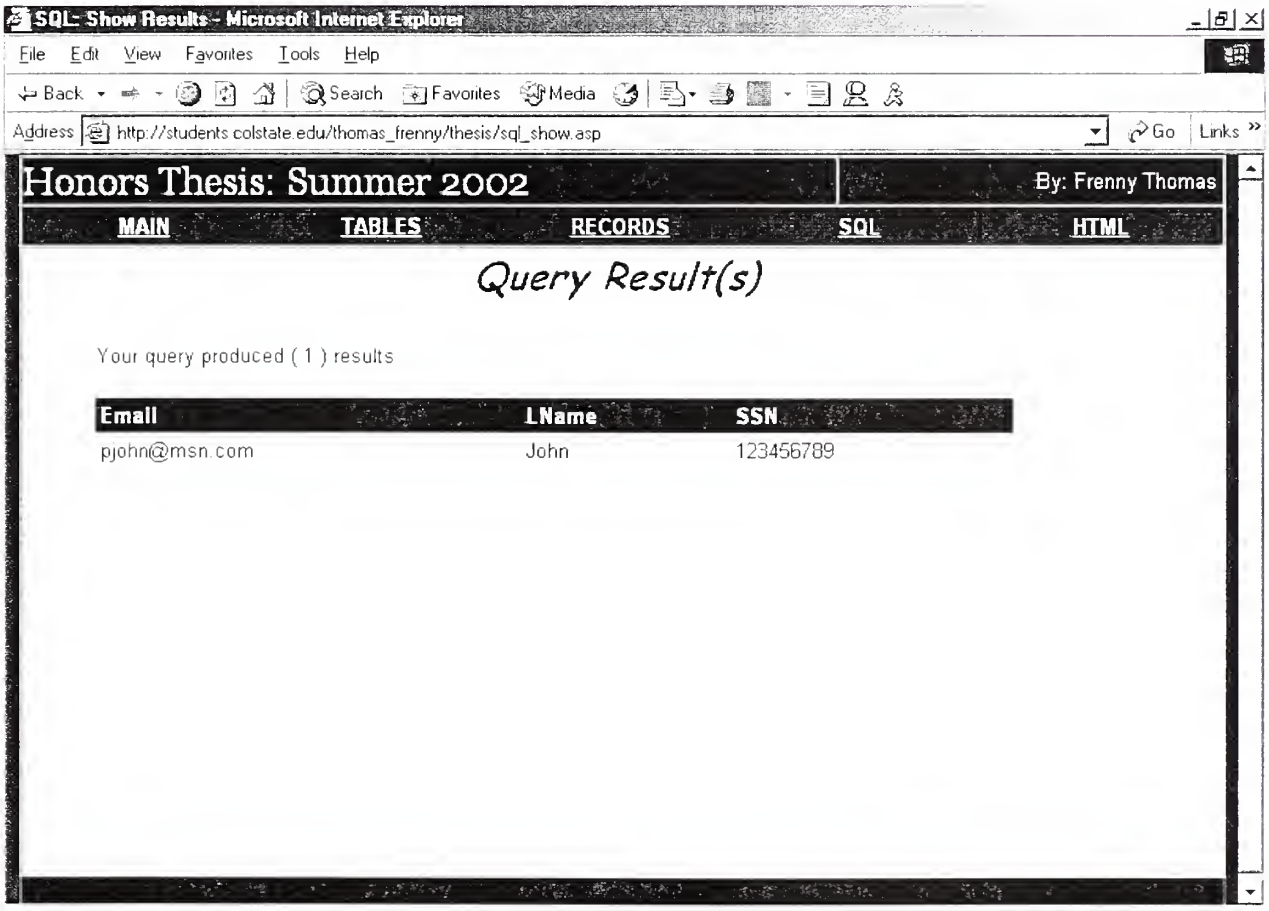
Step # 12

- Click the "SQL" link on the top navigational bar
- Fill in a SQL query to retrieve all the records within the "Customers" table
- Click the "Submit" button



Step # 13

- Query Results as well as a record count will be shown on the following page



Step # 14

- Click the "HTML" link on the top navigational bar
- Type (or Cut & Paste) a general html page into the large text area.
- Use the HTML and PseudoASP guidelines to display the "Email" value for a record in the "Customers" table which has a LName of "John"
- Provide a filename of "demo.asp"
- Click the "Submit" button

HTML Processing - Microsoft Internet Explorer

File Edit View Favorites Tools Help

Back Search Favorites Media

Address http://students.colstate.edu/thomas_frenny/thesis/html.asp Go Links

5. Use relative paths on all links. Since querystring variables are allowed in your hyperlinks, use the "&" operator instead of the "?" marker when attaching variables.
   For example: <a href="page2.htm&sectionid=3&title='Sports'">

6. *Only use references to valid tables and fields in this database
   **Remember! Enclose text values in single quotes, and date/time values in # signs

File Name: demo.asp example: template1.htm

```
<html>
<body>
<h1>Good Morning Panelists!</h1>
<p>The following is a value from Customers
<p><font color="purple"><#Customers||Email||LName='John'#></font>
</body>
</html>
```

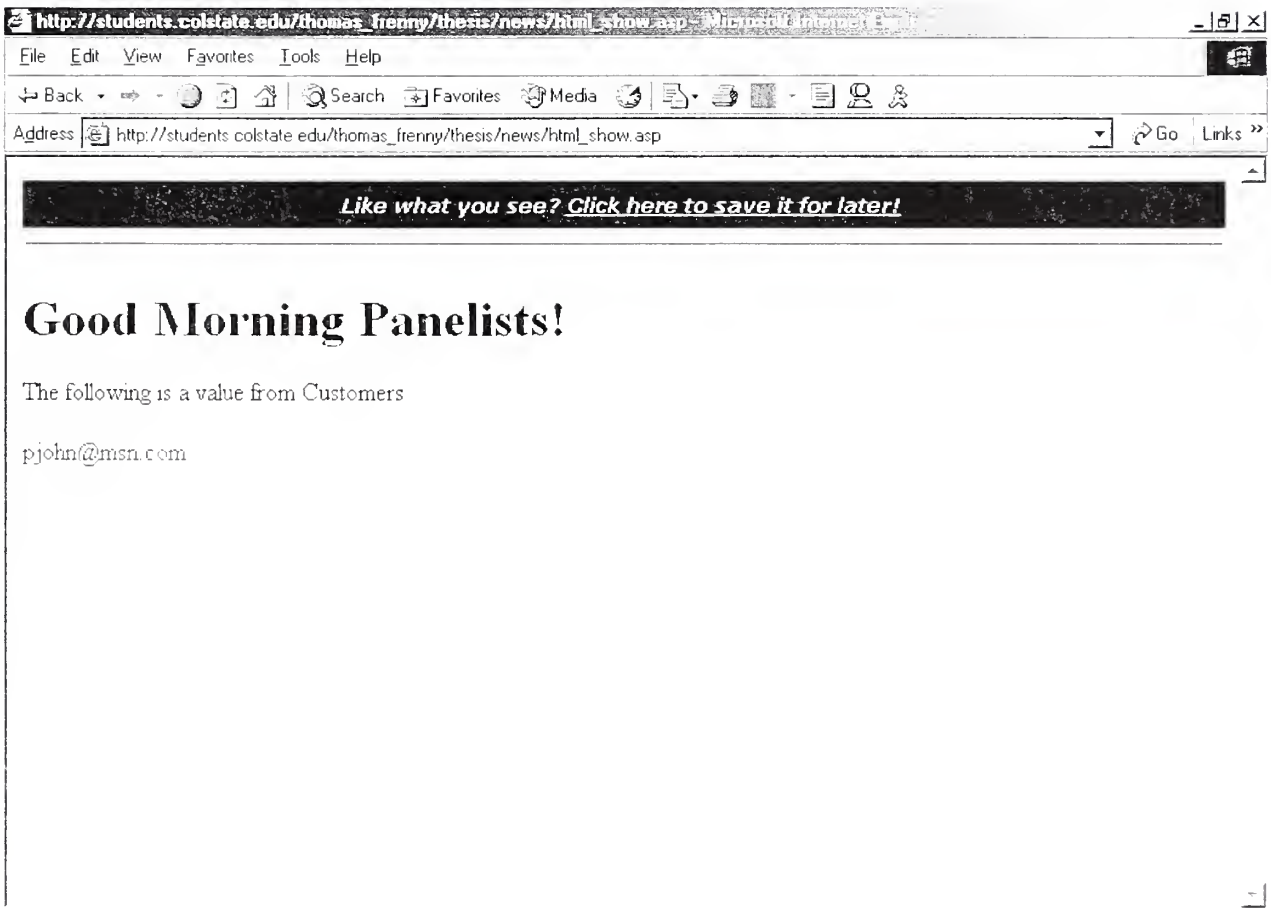
Browse...

If you do not see a "Browse" button, your browser does not support attachments.

Submit Reset

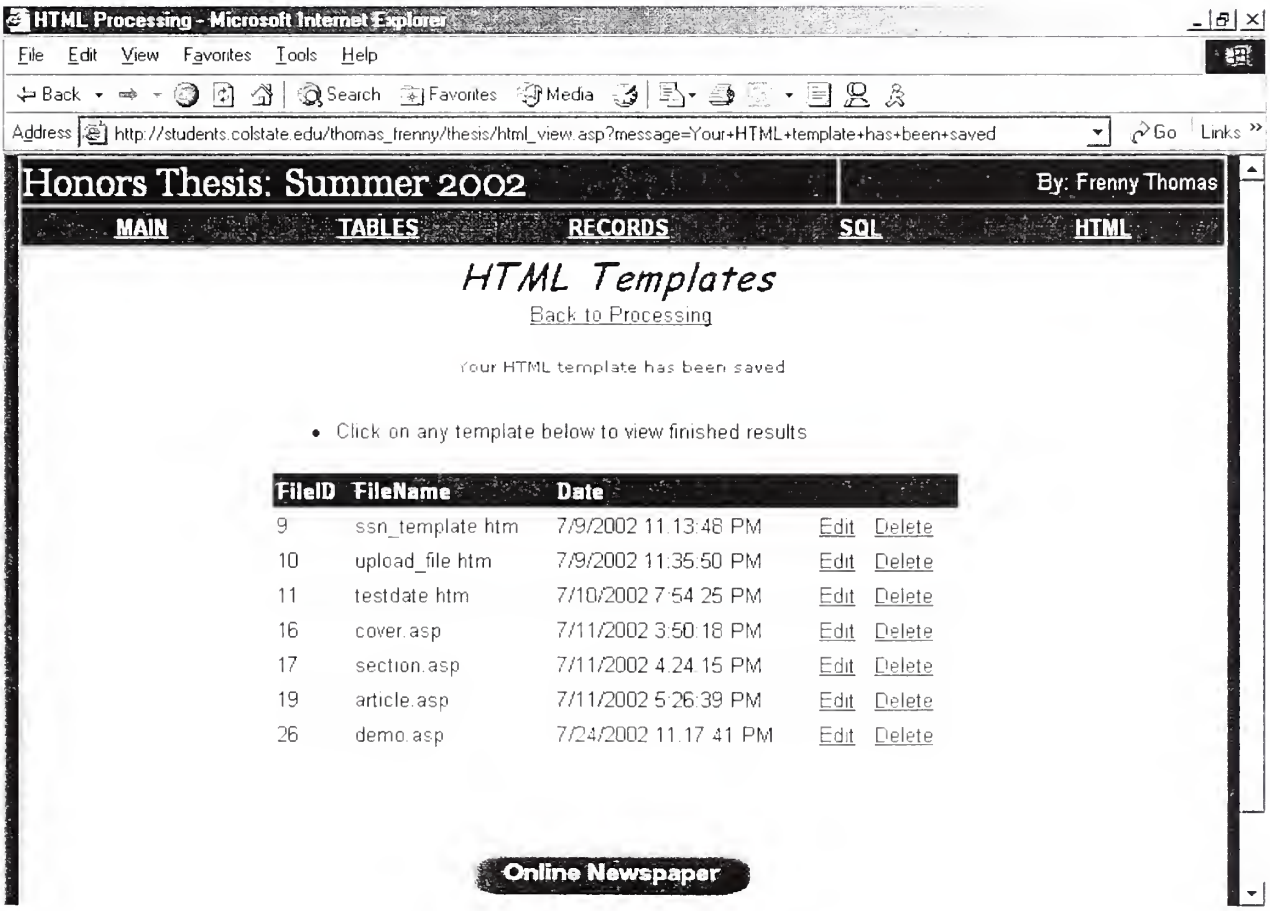
Step # 15

- A preview of the submitted HTML will be shown on the next page
- Click on the link up top to "Save it for later"



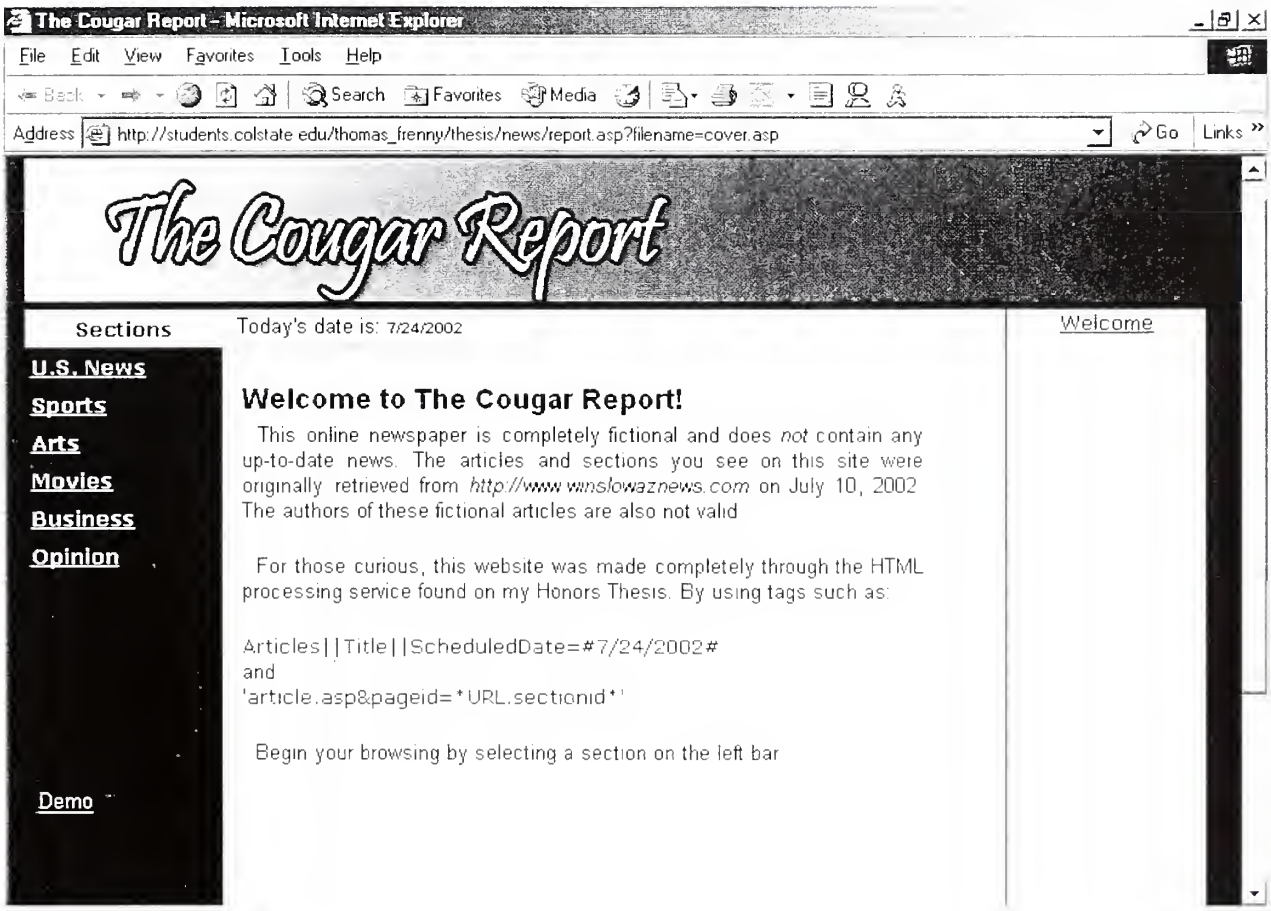
Step # 16

- A confirmation message will be displayed on the next page
- There will also be a list of all the previously submitted files and their details
- (Notice the "demo.asp" file at the bottom)
- Click on the "Online Newspaper" button to view the fictional newspaper previously generated



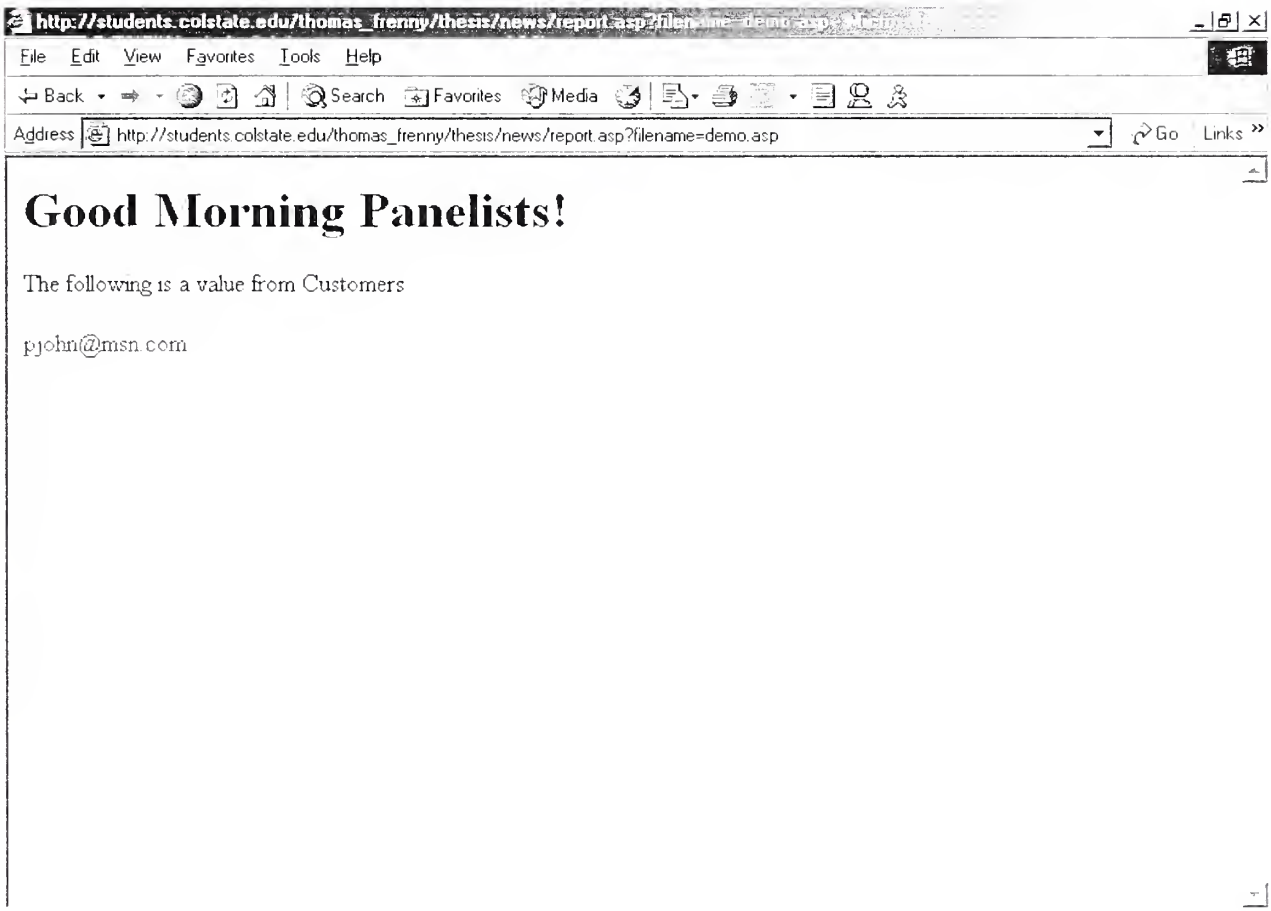
Step # 17

- The cover page of the *Cougar Report* will be displayed
- Click on the "demo.asp" link on the left navigational bar (it had been previously hard-coded into the cover page)



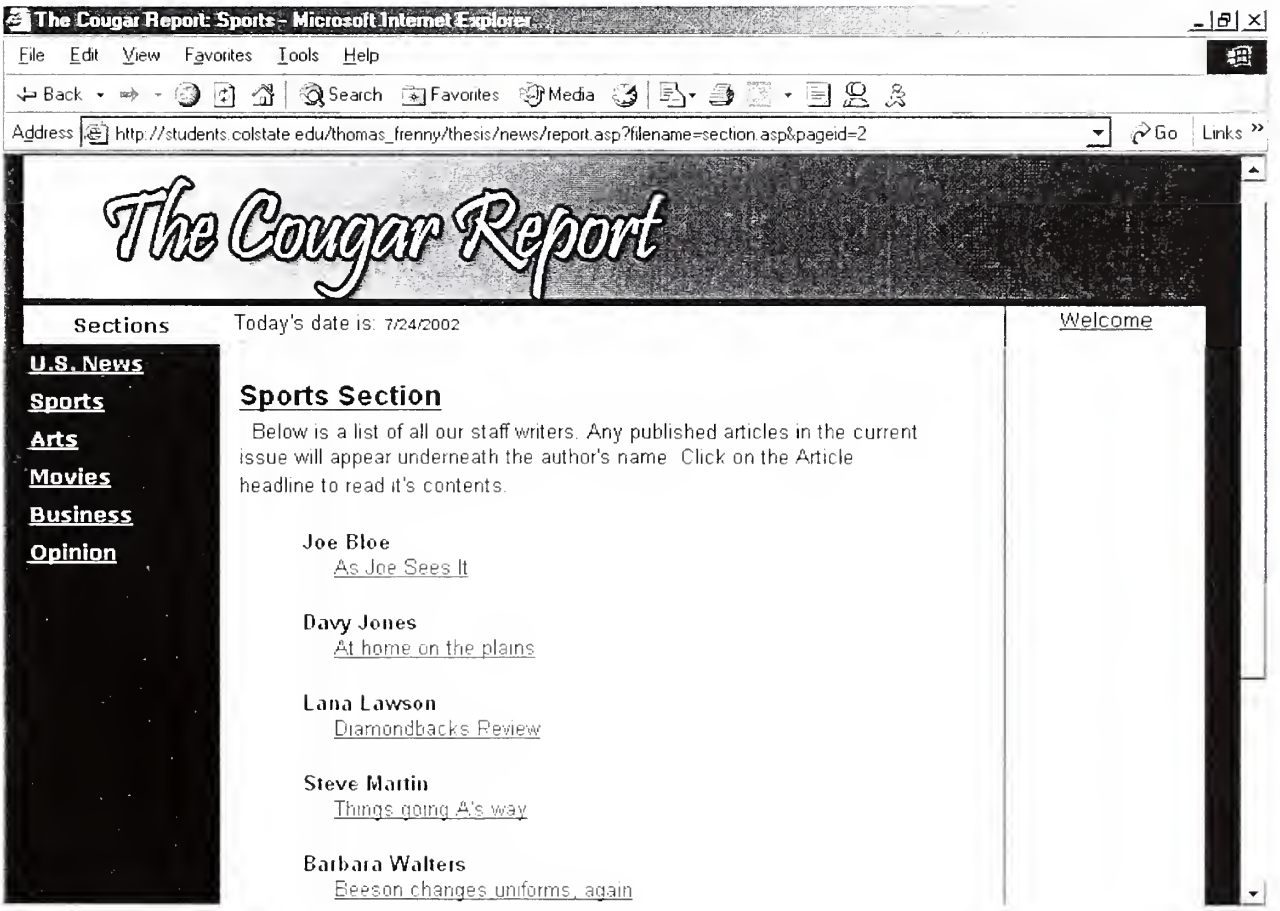
Step # 18

- The recently created "demo.asp" file will be displayed with current information from the "Customers" table



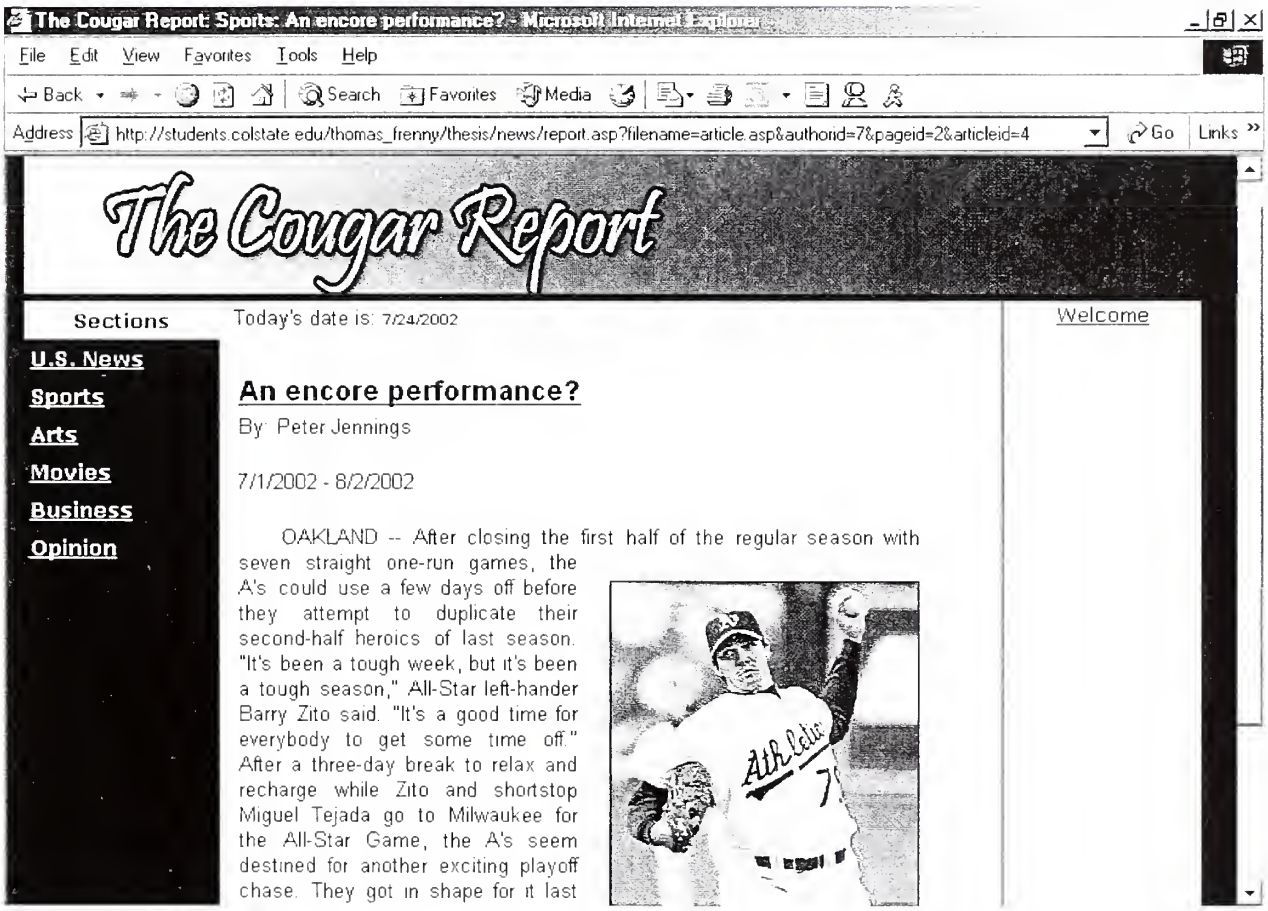
Step # 19

- Click on the "Sports" section to view all the authors and their articles within this category



Step # 20

- Click on any one of the article titles to read the content and view (if any) accompanying photos



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Balaji, R., & Mitchell, S. (n.d.). Working with ADOX. 4GuysFromRolla.com. Retrieved May 20, 2002, from http://www.4guysfromrolla.com/webtech/013101-1.shtml

Buser, D., Kauffman, J., Llibre, J. T., Francis, B., Sussman, D., Ullman, C., & Duckett, J. (1999). Beginning Active Server Pages 3.0. Acocks Green: Birmingham.

McManus, J. P. (June 1999). Ease Data Access with ADOX. DevX. Retrieved July 1, 2002, from http://www.devx.com/upload/free/features/vbpj/1999/06jun99/jm0699/jm0699.asp

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Pozadzides, J., & Quinn, L. (1997). Cascading Style Sheets. WDG: Web Design Group. Retrieved July 5, 2002, from http://www.htmlhelp.com/reference/css

Rahmel, D. (1999). Database Programming with Visual Basic 6 in 24 hours. Indianapolis, IN: Sams Publishing.

Wilkinson, B. (2000, October 16). How can I retrieve the fields in my form in the order they appear in the form?. 4GuysFromRolla.com. Retrieved June 20, 2002, from http://www.aspfaqs.com/aspfaqs/ShowFAQ.asp?FAQID=64

**Cougar Report articles Retrieved July 10, 2002, from http://www.winslowaznews.com

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A Thesis Submitted in Partial Fulfillment of
Requirements of the CSU Honors Program

For Honors in the degree of
Bachelor of Science
in
Computer Science,
College of Science,
Columbus State University

Thesis Advisor _____ Date 7/22/02

Committee Member _____ Date 7-22-02

Committee Member _____ Date 7-22-02

CSU Honors Committee Member _____ Date 7-22-02

Coordinator, Honors Program _____ Date 7/22/02